Washington State Department of
Labor & Industries

Vision Therapy
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Department of Labor and Industries
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Background Policy Information

Vision therapy is a broad term used to describe services provided to rehabilitate or otherwise improve or correct visual deficits. Typically, vision therapy is provided by optometrists with specific training in the field. Vision therapy includes a wide range of treatment approaches. Although there is no clear consensus on VT, treatment regimen involves use of lenses, prisms, vectograms, aperture rule, filters, occlusion and eye exercises.

Food and Drug Administration (FDA); Vision therapy is a procedure and is not subject to FDA regulation. Devices used in vision training program may require 510(K) clearance.

The EYEPORT® Vision Training System (Exercise Your Eyes Inc.) is a vision training device cleared for use by the FDA in March 2006. The FDA classifies the EYEPORT Vision Training System as a fixation device and it is indicated for the treatment of poor accommodative and vergence facility, convergence insufficiency, and large accommodative lag (in non-presbyopic patients).

Literature Search

Based on the information provided, the following search terms “vision therapy and TBI”, “vision therapy after injury”, “orthoptics”, “oculomotor therapy after TBI” were searched in PubMed, Google scholar, HAYES and the National Clearinghouse guideline (NGC) website. The total number of articles retrieved from search was 15, 9 of these studies were excluded (studies in children).

Scientific Evidence (Convergence Insufficiency (CI))

Systematic reviews

There is a 2011 Cochrane review that evaluated the evidence on vision therapy for convergence insufficiency [1] . Six trials (3 in children and 3 in adults) with a total of 475 participants were included in the review. The 3 trials in children and 1 of the trials in adults were conducted by the multicenter Convergence Insufficiency Treatment Trial (CITT) study group. The authors concluded that current research suggests that outpatient vision therapy/orthoptics is more effective than home-based pencil push-ups or home-based computer vision therapy/orthoptics for children. In the adult population, evidence of the effectiveness of vision therapy is less consistent. There is a gap in current knowledge

noted in this review, including the different forms of vision therapy being used and also the durations of therapy.
A systematic review by Rawstron JA et al in 2005 [2] looked at the efficacy of eye exercises as used in vision therapy. The review refereed 43 studies. They found that small controlled trials and large number of cases support the treatment of convergence insufficiency with vision therapy.

Randomized Trials

Scheiman et al (2005) [3] published results from a randomized multicenter clinical trial to assess symptom reduction on convergence insufficiency (CI). The authors randomized study population into 3 groups, vision therapy/orthoptics (n=12), pencil pushups (n=15) and placebo vision therapy/orthoptics (n=13). The authors found that CI Symptom Survey score showed a significant reduction in symptoms for patients in each of the three treatment groups ($p< 0.001$ for each group). Patients in the vision therapy/orthoptics group showed a reduction in symptoms from 36.5±8.7 to 20.7±12.2. Patients in the placebo vision therapy/orthoptics and pencil pushups groups also showed a decrease in mean symptom score (placebo from 37.5±11.4 to 25.2±10.3, pencil pushups 37.6±7.7 to 26.5±7.3), although this change was not as large as that observed in the vision therapy/orthoptics group. The authors concluded that in young adults, office-based vision therapy/orthoptics improved the signs associated with CI.

Retrospective case report

Doble J.E et al (2010) [4] did a retrospective search of the optometrist database between January 2005 and April 2008 identified 83 TBI patients. Patients found to have vertical heterophoria (VH) were treated with individualized prismatic spectacle lenses. 43 completed the study. The primary outcome measure was improvement in VH symptom. The study found that the mean difference in VH symptom score after prism treatment was 16.7 points (mean = 12.8, $p<0.01$) which represents a relative reduction in VH symptom of 48.1%. The mean subjective improvement in symptoms from baseline was 71.8%.

Ciuffreda K. J (2008) [5] did a retrospective cohort study of TBI and cerebrovascular accident patients (N=40, (TBI=33 and CVA=7)) that underwent conventional vision therapy for optometric disorders. The primary outcome measure was symptom reduction. For TBI Patients: 33 (~90%) showed either complete or marked reduction in 1 or more of their primary symptoms. 27 of the 30 (90%) showed either marked improvement or normalization in 1 or more of their primary clinical signs. All 7 of the CVA patients showed complete or marked reduction of their primary symptom. All patients were re-evaluated at 2 -3 months and all signs and symptoms remained stable.

Adler P et al (2002) [6] also conducted a retrospective study of patients diagnosed with convergence insufficiency (N=92). The outcome measure was restoration of near point convergence (NPC) and significant reduction in symptoms. Of the 92 patients, 90 (98.9%) patients achieved the generous 10 cm point for NPC. The average improvement for NPC was 18.3 cm (SD ± 11.3; χ^2, $p<0.001$). All symptoms except seeing colors around text and eye rubbing during close task show significant improvement after OVT ($p\leq0.01$). The study concluded that the results clearly indicate that when CI is defined by NPC alone, VT is an effective form of therapy.

Case Studies

Peddle A et al (2005) [7] had 2 adults cases both with moderate to intermittent exotropia.
Case 1: A 32 year old white male. He was diagnosed with moderate size, intermittent alternating exotropia of the basic type, and accommodative insufficiency.
Case 2: 30 year old white male.
After clinical testing he was diagnosed with moderate size intermittent alternating exotropia of the basic type and accommodative infacility. Both cases were managed with 20-30 sessions of VT. After 20 weeks, both cases were free of all diplopia and asthenopia, with better awareness of eyes teaming together. Clinically, case 1 was exophoric at distance and at nearby cover test. Case 2 was reevaluated 5 years after completing therapy and he remained aligned all day. They concluded that Optometric VT was highly successful in both patients with childhood intermittent exotropia.

Technology Assessment

Hayes published a complete technology assessment of Vision Therapy in November 2011[1]. The conclusion of the assessment was:

Conclusions: Moderate evidence from two randomized controlled trials (RCTs) indicates that office-based vision therapy/orthoptic exercises with home exercises can improve symptoms and clinical signs of convergence insufficiency (CI) in children. The reduction in symptoms and signs of CI appears to be maintained in the majority of patients for at least 1 year. Limited evidence from one RCT suggests that home-based computer vergence/accommodative therapy may improve the clinical signs, but not symptoms of CI in children; no definitive conclusions can be drawn on the basis of this one study. Evidence of low quality was available for use of base-in prism glasses for treatment of CI. There was little evidence for vision therapy as a treatment for other disorders of vergence. Low-quality evidence from several small trials was available for different office-based and home- based vision therapy programs for treatment of accommodative dysfunction with or without the presence of CI. Vision therapy is safe, with no reported side effects. Therefore, the following **Hayes Ratings** are assigned: **B** – For office-based vision therapy/orthoptics as a treatment for convergence insufficiency (CI) in children. **C** – For office-based vision therapy/orthoptics as a treatment for CI in young adults and adults. This Rating reflects inconsistencies among the study results. **C** – For home-based vision therapy/orthoptics as a treatment for CI. This Rating reflects inconsistencies among the study results. **C** – For base-in prism reading glasses as a treatment for CI. This Rating reflects inconsistencies among the study results. **C** – For office-based and home-based vision therapy/orthoptics as a treatment for accommodative dysfunction in patients with or without CI. This Rating reflects inconsistencies among the study results. **D2** – For vision therapy as a treatment for convergence excess, divergence insufficiency, and divergence excess, this rating reflects the paucity and poor quality of evidence for these indications.

[1] Vision Therapy for Accommodative and Vergence Dysfunction November 2011. Hayes Inc.

Other Insurers (non-workers compensation):

Insurer	
UnitedHealth care (UHC)	UHC considers orthoptics or vision therapy proven for the treatment of convergence insufficiency in the absence of accommodative disorder
Regence	Regence will cover up to 12 sessions of office based vergence/accommodative therapy when the following criteria are met: • Diagnosis of convergence insufficiency • Convergence insufficiency and stereoacuity are documented by all of the following 1. Exodeviation at least 4 prism diopters greater 2. Insufficient positive fusional vergence at near (<15 prism diopters. 3. Near point convergence break of >6cm; and 4. Appreciation by patient of at least 500 seconds of arc on stereoacuity testing.
Aetna	Covered: Considers up to 32 vision therapy visits medically necessary for the following conditions: Amblyopia, Strabismus, non-strabismic disorder of binocular eye movements, non-presbyopic accommodative inability for persons over 12 years old. Considered Experimental: Eccentric fixation Anomalous retinal correspondence Traumatic brain injury Dyslexia and learning disabilities Any diagnosis not otherwise listed
CIGNA	Does not cover vision therapy because these treatments are considered experimental, investigational, or unproven for the management of visual disorders.

Conclusion:

At this time the evidence only supports use of vision therapy for convergence insufficiency. There is inadequate evidence available to support its use for other symptoms of traumatic brain injury.

Reference:

1. **Scheiman, M., J. Gwiazda, and T. Li, *Non-surgical interventions for convergence insufficiency.* Cochrane Database Syst Rev, 2011(3): p. CD006768.**
2. **Rawstron, J.A., C.D. Burley, and M.J. Elder, *A systematic review of the applicability and efficacy of eye exercises.* J Pediatr Ophthalmol Strabismus, 2005. 42(2): p. 82-8.**
3. **Scheiman, M., et al., *A randomized clinical trial of vision therapy/orthoptics versus pencil pushups for the treatment of convergence insufficiency in young adults.* Optom Vis Sci, 2005. 82(7): p. 583-95.**
4. **Doble, J.E., et al., *Identification of binocular vision dysfunction (vertical heterophoria) in traumatic brain injury patients and effects of individualized prismatic spectacle lenses in the treatment of postconcussive symptoms: a retrospective analysis.* PM R, 2010. 2(4): p. 244-53.**
5. **Ciuffreda, K.J., et al., *Vision therapy for oculomotor dysfunctions in acquired brain injury: a retrospective analysis.* Optometry, 2008. 79(1): p. 18-22.**
6. **Adler, P., *Efficacy of treatment for convergence insufficiency using vision therapy.* Ophthalmic Physiol Opt, 2002. 22(6): p. 565-71.**
7. **Peddle, A., E. Han, and A. Steiner, *Vision therapy for basic exotropia in adults: 2 case studies.* Optometry, 2011. 82(8): p. 467-74.**